

Exponents

Base^{Power}

$$x^m = x \cdot x \cdot x \cdot x \dots \cdot x$$

m number of factors of **x**.

The **power** tells us how many times we multiply the **base** by itself.

Expand to compute the numerical term:	
$5^3 = 5 \cdot 5 \cdot 5 = 125$	$3^4 = (3)(3)(3)(3) = 81$
Variable Only: Expand the variable by the number of factors {Power}	
$x^3 = x \cdot x \cdot x$	$y^5 = y \cdot y \cdot y \cdot y \cdot y$
$x^3 x^2 = (x \cdot x \cdot x) \cdot (x \cdot x) = x^5$	$g g^4 = g \cdot (g \cdot g \cdot g \cdot g) = g^5$
Base and Parenthesis: Use parenthesis to help organize your work	
$(2x)^3 = (2x) \cdot (2x) \cdot (2x)$ rearrange $2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x = 8x^3$	$(-3x)^2 = (-3x) \cdot (-3x)$ rearrange $(-3) \cdot (-3) \cdot (x \cdot x) = 9x^2$
Mixed Variables	
$x^3 y^2 = x \cdot x \cdot x \cdot y \cdot y$	$x y^2 x^3 y^4$ $x x^3 y^2 y^4$ like bases $x \cdot (x \cdot x \cdot x) \cdot (y \cdot y) \cdot (y \cdot y \cdot y \cdot y)$ Expand and then Simplify $x^4 y^6$
Use (parenthesis) or dot • for multiplication.	
$(2x)^3 = 2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x = 8x^3$	$x^3 y^2 = x \cdot x \cdot x \cdot y \cdot y$

Important

Recall that $x^1 = x$ the **power of 1** is implied.

Also the **coefficient of 1** is implied. $1 x^1 = x$

What is the base for the following expression? $(x - 1)^2$

the base is **(x - 1)**. The power tells us to multiply the base by itself twice.